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AUTHOR Correa-Beningfield, Margarita
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ABSTRACT

A study compares and contrasts a set of English and Spanish prepositions of location in the context of prototype theory. It seeks to establish the prototype concept of each preposition and the degrees of prototypicality by testing for native-speaker choices of examples that illustrate best the most basic use of the preposition. The prepositions studied are "in, on, at, and over" (English) and "en and sobre" (Spanish). The study also tests the hypothesis that the English preposition whose prototype corresponds most closely to the prototype of a given Spanish preposition tends to be preferred to other prepositions by Spanish speakers learning English, regardless of whether or not it is appropriate, in contexts in which that Spanish preposition would be used. Four instruments were designed to determine prototype concepts and degree of prototypicality. It is concluded that some prepositions are describable in terms of prototypes and others are better stated in terms of an abstract set of defining features. In addition, there appear to be "latent" prototypes that may not be elicited easily except under certain conditions, such as the need to express oneself in another language. (Author/MSE)

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ON THE INTERACTION OF PROTOTYPE AND LANGUAGE TRANSFER*

Margarita Correa-Beningfield

Universidad Complutense de Madrid

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ABSTRACT

ON THE INTERACTION OF PROTOTYPE AND LANGUAGE TRANSFER

Margarita Correa-Beningfield

This study compares and contrasts a set of English and Spanish prepositions of location in terms of prototype theory. It seeks to establish the prototype concept of each preposition as well as degrees of prototypicality by testing for native-speaker choices of the "best" examples that illustrate the most basic use of the preposition. The prepositions under study are: English in, on, at and over and Spanish en and sobre. It then seeks to test the following hypothesis: The English preposition whose prototype corresponds most closely to the prototype of a given Spanish preposition tends to be preferred to other prepositions by Spanish speakers learning English, regardless of whether it is appropriate or not, in contexts in which that Spanish preposition would be used.

Four instruments were designed for the study and tested on relevant populations. The results were tabulated and subjected to statistical analysis. The most significant conclusions were: Prototype concepts were established for English in, on and over. Degrees of prototypicality were less clear for at. The prototype concept established for Spanish sobre is the same as for English on. In the case of en a clear prototype did not come through strongly, but evidence of an identification between en and in appeared on the transfer tests. The transfer tests showed strong positive transfer where en = in and where sobre = on and strong negative transfer for other uses of the prepositions under study.

Among the implications of this study are: Some meanings are describable in

terms of prototypes and others are better stated in terms of an abstract set of defining features. Furthermore, there seem to be "latent" prototypes, which may not be easily elicited except under certain conditions, such as the need to express oneself in another language.

In this study I systematically compare and contrast a small set of English and Spanish prepositions of location within the framework of prototype theory; these are prepositions which show in a particularly striking way the absence of a one-to-one correspondence between English and Spanish. This study (1) attempts through objective testing to establish prototypes as well as degrees of prototypicality for the English and Spanish prepositions under consideration; (2) investigates language transfer from Spanish to English in locative uses of these prepositions; and (3) examines the role of prototype in such transfer.

As prototypicality forms the basis of my study, I would like to go over the concept briefly. Rosch (1973) showed that people categorized objects in the world by means of their resemblance to a central member of the category. This central member is the "clearest case," that is, the "best example" of the category. The "best" examples will be those that come to mind most readily to the native speakers of a language. Rosch not only establishes the existence of a prototype concept, but she also argues for degrees of prototypicality. For example, an apple is a prototypical fruit, a fig less so, and an olive still less. Rosch proved that subjects overwhelmingly agree in their judgements of how good an example is of a category.

Therefore, we establish the prototype concept of each preposition of location by identifying the "best" examples that illustrate the most basic use of that preposition and analyzing the semantic features found in those "best" examples. The prototype concept is then what characterizes the "best" examples. And, again, the "best" examples will be those that the native speakers of a language would agree come to mind most readily.

Let us consider the following examples:

(1) (a) There is a ball in the box.

(b) There are cows in the field.

(c) John is running in the rain.

(d) Mary is in love.

In example (1a), box, the noun that is governed by in, is an example of a container; (1a) in the box seems to be a more prototypical spatial construct than (1b) in the field, where field is an example of an enclosure. Example (1b), in turn, is more prototypical than (1c), in the rain, where rain, the noun governed by in, does not have clear-cut boundaries, although there is still a spatial location. Finally, (1d) in love is a metaphorical use, that is, a use obtained through an extension to a different domain of the more basic and concrete uses.

Let us now turn to the prototype concept of on. We will consider the following examples:

(2) (a) There is a ball on the table.

(b) The frost made patterns on the window.

(c) There is a fish on the hook.

(d) The plane arrived on time.

Example (2a), on the table, with the semantic feature [+horizontal surface], seems to be the "best" example, the most prototypical. Example (2b) seems less prototypical than (2a); in (2b), on the window, we have the surface element, but we no longer have horizontality. Example (2c) is presumably even less prototypical than the two preceding ones; on the hook is a spatial expression, but it does not have the surface element to any appreciable extent. And finally we have a use that is even less prototypical than the three already mentioned, that of (2d), on time, which again is a metaphorical use.

In dealing with the preposition on, Tanaka (1983) says that whereas all languages have an element corresponding to English on in spatial constructs in-

volving a horizontal surface, some languages, like French, Japanese and Korean, do not use the same element in those involving a vertical surface. However, Tanaka mentions that this extended use, that is, the use of the equivalent of on in relation to a vertical surface, is characteristic of languages like Chinese, English and Spanish. Tanaka cites Spanish at this point without further discussion. However, Spanish is especially interesting in this regard, because it has not only a single word en for expressions that imply contact with a horizontal surface and for expressions that imply contact with a vertical surface, both corresponding to the English on, but it has the same word en for expressions that imply position in a container and in an enclosure, corresponding here to the English preposition in.

Examples: English in = Spanish en

There is a ball in the box.
Hay una pelota en la caja.

María lives in Spain.
María vive en España.

English on = Spanish en

The pencil is on the floor.
El lápiz está en el suelo.

That picture goes on that wall.
Ese cuadro va en esa pared.

It should be noted that these equations represent an overgeneralization and there will not always be a one-to-one correspondence, because there are in addition cases where we will have, for example, not en but sobre corresponding to English on.

Examples: I left it on the TV set.
Lo dejé sobre el televisor.

The box is on the chest of drawers.
La caja está sobre la cómoda.

However, we will limit our consideration to en at this point.

What is more prototypical to the Spanish speaker in his use of en: position in a container or position in an enclosure? Or is it even position on a horizontal surface? As we have already seen, English has two different items, one for expressing position on a horizontal surface (=prototype concept of on) and one for expressing position in a container (=prototype concept of in). If Spanish en corresponds to both on and in, which of these two concepts is more prototypical for the Spanish word?

How is this going to affect Spanish speakers learning English? Are they going to overextend the use of the English preposition on in situations where in is appropriate? Or, on the contrary, are they going to overextend the use of in where on is appropriate?

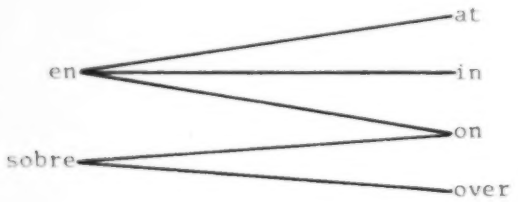
It has been pointed out (Modern Language Association, 1960) that the difficulty encountered in giving a direct translation of prepositions is due to the fact that the semantic ranges of corresponding prepositions are usually different. For example, in Modern Language Association (1960) we read that Spanish en is very often translated as in, on or at, and relatively infrequently as to, for or of.

Since to take account of the English prepositions in the full complexity of their interrelations would be far beyond the scope of this study, a delimitation of the prepositions to be examined is necessary.

Boggess (1978), citing Slobin, says that in and on are the first locatives that a child acquires in learning English as its first language. She goes on to say that these represent basic cognitive concepts which can be incorporated into other locatives. Since my concern is with the most basic locative concepts, these two prepositions are my starting point.

A preliminary survey was conducted of Spanish-speaking ESL (English as a

Second Language) students at Hostos Community College of the City University of New York in which one group was asked to supply a single word in Spanish for English in and a single word for on and another group was asked for a single word in English for en and a single word for sobre. On the basis of the results obtained, we arrive at the following pattern:



A much more complex network could be developed if we continued to elicit associations with at and over, for example, but the prepositions I have chosen appear to be the most basic. Therefore, I deal in my study with the English prepositions in, on, at and over and the Spanish prepositions en and sobre. Furthermore, I limit my study to the static spatial senses of these prepositions rather than attempt to incorporate a consideration of other senses, such as the directional or the temporal.

Four instruments were designed for this study: (1) the Prototype English Test, (2) the Prototype Spanish Test, (3) the Translation Cloze Test and (4) the Picture Cloze Test. The test questions were created specifically for this study. They were designed to represent various locative uses of the prepositions under consideration, and were based on the different locative senses that appeared in the literature on these prepositions, focusing on those senses for which hypotheses could be developed regarding degrees of prototypicality, but including other senses as well where possible.

The Prototype English Test was designed to test for prototypicality and for degrees of prototypicality for the English prepositions. The subjects for

this test were native speakers of English studying at Mount Vernon High School, in Westchester County (New York), who were in their junior or senior year. The Prototype Spanish Test, in turn, tested for prototypicality and for degrees of prototypicality for the Spanish prepositions. This test was given to native speakers of Spanish studying English as a Second Language at Hostos Community College of the City University of New York.

The Translation Cloze Test and the Picture Cloze Test were designed to test language transfer. I was trying to see to what degree the subjects systematically made erroneous choices in their use of English prepositions, and whether and to what extent such systematic errors confirmed the following hypothesis regarding the interaction of prototypicality and transfer:

Prototypicality Transfer Hypothesis

> The English preposition that corresponds most closely in its prototype concept to the prototype concept of a given Spanish preposition will tend to be preferred by Spanish speakers learning English to other prepositions, regardless of whether it is appropriate or not, in referring to situations which are designated in Spanish by spatial constructs employing the given preposition.

Thus, if the prototype concept of sobre corresponds to English on in its prototypical meaning, then on will be overwhelmingly preferred, appropriately, in a sentence like:

- El despertador está sobre la mesa de noche.
  The alarm clock is on the night table.

But there will also be a strong tendency to use on instead of over, inappropriately, in a sentence like:

- Una lámpara cuelga sobre la mesa.
  A lamp is hanging over the table.

Similarly, if the prototype concept of en corresponds to English in in its prototypical meaning, then not only will we find the appropriate use of in in a sentence like:

- Quedan cuatro pelotas en la caja.
  There are four balls left in the box.

but we will also find heavy reliance on in where on or at would be appropriate. For example:

- Susana lleva una alianza en el dedo.
  Susan is wearing a wedding ring on her finger.

- Espérame en la ventanilla.
  Wait for me at the ticket window.

The Translation Cloze Test was given to native speakers of Spanish who were studying in intermediate-level classes in English as a Second Language at Hostos Community College. The Picture Cloze Test was given to another group of such students. The results of the four tests were tabulated and subjected to statistical analysis (Correa-Beningfield, 1985).

I will now endeavor to summarize the results of this study and to point out some of its implications. Prototype concepts were established for English in, on and over. Degrees of prototypicality were less clear for at. The prototype concept for in is "location in a container," for on "location in superior contact with a horizontal surface" and for over "location in a directly superior position without contact." The prototype concept established for Spanish sobre is the same as for English on. In the case of en a clear prototype did not come through strongly, but evidence of an identification between en and in appeared on the transfer tests. The transfer tests showed strong positive transfer where en=in and where sobre=on, such as Los niños están jugando en el jardín (The children are playing in the garden), where in was chosen by 88.2% of the population tested, or El despertador está sobre la mesa de noche (The alarm clock is on the night table), where on was chosen by 84.9% of the population. The transfer tests also showed strong negative transfer for certain other uses of the prepositions under study, as in Sólo había unas pocas personas en la

conferencia (There were only a few people at the lecture), where in was preferred by 61.3% of the population, or Una lámpara cuelga sobre la mesa (A lamp is hanging over the table), where on was given by 53.8% of the population. However, the Prototypicality Transfer Hypothesis was not confirmed in three specific sets of uses.

Thus, on was chosen where the Prototypicality Transfer Hypothesis would predict in in two different situations. On the one hand, on was chosen in the Translation Cloze Test for the one example in which the preposition governed a noun with the features [+horizontal, +surface], namely, El saltador está en el trampolín (The diver is on the springboard). An explanation for this result is that even when students see the word en, if it triggers in their mind "horizontal surface," then "horizontal surface" triggers an association with sobre and prototypically sobre corresponds to English on. On the other hand, on was chosen both in the Translation Cloze Test and in the Picture Cloze Test for the example in which the preposition governed a noun with the features [+vertical, +surface], namely, Pon ese cuadro en esa pared (Put that picture on that wall) in the Translation Cloze Test, and There is a map on the wall in the Picture Cloze Test. A possible reason for these results is that one of the first things that the students probably have been taught in class as examples of the preposition on is its use in expressions like "the picture is on the wall" and "the map is on the wall." Such cases reflect the specific exemplar (SE) condition developed in Tanaka (1983) on the basis of a proposal by Carey (1978):

> We may express the SE condition as follows: the teacher provides certain exemplars of a category, among which the student picks up certain specific exemplars, upon which his linguistic behavior is based. The principle here is this: stick to a particular use(s) of a category (e.g., a word) with which you are familiar. (Tanaka, 1983: 171)

In the two following examples in the Translation Cloze Test, Carlos me está esperando en la puerta (Charles is waiting for me at the door) and Espérame

en la ventanilla (Wait for me at the ticket window), at was chosen where the Prototypicality Transfer Hypothesis would predict in. The Picture Cloze Test offers an explanation of why this should be in defiance of the Prototypicality Transfer Hypothesis. In the Picture Cloze Test, we get at very strongly in cases where it does not correspond to en but where there is a clear specific exemplar, such as, Charles is at the garage and Joe is at the supermarket. Presumably this use of at is something that the students have been taught early. As for the Translation Cloze Test, although ventanilla (ticket window) might not have been encountered in class, "waiting at some place" is again something that the students have probably been taught in their first exposure to at. Precisely because at does not correspond easily with anything in Spanish locative constructs, a specific exemplar is needed to teach this use of at. However, other cases of at which do not involve the specific exemplar show a high frquency of occurrence of in, and this confirms the Prototypicality Transfer Hypothesis.

The following implications can be derived from the results of this study:

The results from the Translation Cloze Test, when contrasted with those from the Picture Cloze Test, show that the influence on transfer can be stronger when a text in the native language is presented than when we have a presentation of non-linguistic images. Therefore, the influence of prototype on language transfer does not take place to the same degree under all conditions.

Contrary to the conclusions of Kellerman (1977, 1979) and Tanaka (1983), the results of this study show that negative transfer can be strong even in highly idiomatic (i.e., non-prototypical) uses. Negative transfer was prominent in most of the idioms tested and in one was overwhelming: La vida de un corredor de coches está a menudo en peligro (A racing-car driver's life is often at risk), where in was given by 73.1% of the population, against 16% who

supplied on and only 4.2% who gave the correct answer at. Further research is necessary to determine whether the prepositions in idiomatic phrases behave differently from idiomatic uses of content words, whose idiomaticity may be more salient to the speaker.

It is clear that prototype plays a major role in language transfer. However, neither language transfer nor prototype can be regarded as the sole factors in the way second language learning proceeds. In particular, specific exemplars also play an important role.

The significance of prototype in describing the way meanings function does not negate the relevance of alternative formulations; for example: Spanish en and English at both show a range of uses which is so broad that it is difficult to get at their prototypes, and instead their meaning may best be stated in terms of a very restricted set of defining features, i.e., their "Gesamtbedeutung" (Beale, 1978; Bennett, 1975).

On the other hand, although the difficulties encountered in getting a prototype for the Spanish preposition en and the English preposition at may lead us to believe that not all words have a clear prototype, the results from the transfer tests seem to point to the existence of "latent" prototypes, unrecognized prototypes which may not be easily elicited except under certain conditions, such as, for example, the need to express oneself in another language. In this case, the equation found for en, namely en=in, confirmed the hypothesized prototype concept for this preposition, although it had not come through clearly in the Prototype Spanish Test.

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